

Integration of Evidence Base into a Probabilistic Risk Assessment

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INTRODUCTION

A probabilistic decision support model such as the Integrated Medical Model (IMM) utilizes an immense amount of input data that necessitates a systematic, integrated approach for data collection, and management. As a result of this approach, IMM is able to forecasts medical events, resource utilization and crew health during space flight.

METHODS

Inflight data is the most desirable input for the Integrated Medical Model. Non-attributable inflight data is collected from the Lifetime Surveillance for Astronaut Health study as well as the engineers, flight surgeons, and astronauts themselves. When inflight data is unavailable cohort studies, other models and Bayesian analyses are used, in addition to subject matters experts input on occasion. To determine the quality of evidence of a medical condition, the data source is categorized and assigned a level of evidence from 1-5; the highest level is one. The collected data reside and are managed in a relational SQL database with a web-based interface for data entry and review. The database is also capable of interfacing with outside applications which expands capabilities within the database itself. Via the public interface, customers can access a formatted Clinical Findings Form (CLiFF) that outlines the model input and evidence base for each medical condition. Changes to the database are tracked using a documented Configuration Management process.

DISCUSSION

This strategic approach provides a comprehensive data management plan for IMM. The IMM Database's structure and architecture has proven to support additional usages. As seen by the resources utilization across medical conditions analysis. In addition, the IMM Database's web-based interface provides a user-friendly format for customers to browse and download the clinical information for medical conditions. It is this type of functionality that will provide Exploratory Medicine Capabilities the evidence base for their medical condition list.

CONCLUSION

The IMM Database in junction with the IMM is helping NASA aerospace program improve the health care and reduce risk for the astronauts crew. Both the database and model will continue to expand to meet customer needs through its multi-disciplinary evidence based approach to managing data. Future expansion could serve as a platform for a Space Medicine Wiki of medical conditions.